ABSTRACT

A terrestrial C/A code GPS receiver system digitally samples, filters and stores a segment of 11 half chips of the received composite as a binary number and multiplexes this number for parallel correlation with each of a series of multibit code replicas for the

5   satellites to be tracked. Each of the time delay specific correlation products are accumulated in a cell of a memory matrix so that at least twenty two delays for each satellite may be evaluated each code period providing fast reacquisition, even within a city intersection, as well as correction of multipath tracking and multipath interference. All cells of the memory matrix may be used for an acquisition of a single satellite in about 4

10   ms. Two satellite tracking, in addition to altitude hold, uses cross track hold alternating with clock hold to update the cross track estimate. Single satellite tracking uses cross track and clock hold together. Navigation data is updated with detected changes in motion including turns.